

## ABSTRACT OF THE DISCLOSURE

Methods and compositions are provided for magnetic resonance imaging of biological tissue, particularly methods and compositions for  $^{23}\text{Na}$  and  $^{39}\text{K}$  magnetic resonance imaging of cardiac tissue. In particular, methods of  $^{23}\text{Na}$  magnetic resonance imaging (MRI) cardiac imaging is presented for attenuating  $^{23}\text{Na}$  signals corresponding to ventricular cavity blood and viable well-perfused tissue and for visualizing myocardial infarction. Cardiac tissue is imaged using  $^{23}\text{Na}$  MRI after the introduction of an intravascular paramagnetic contrast agent. Optimally, the intravascular paramagnetic contrast agent is MION-46. The MION-46 suppresses the blood signal intensity in sodium images of ventricular cavities and signal for viable cardiac tissue. The quantity of MION-46 and the echo time (TE) for  $^{23}\text{Na}$  MRI of cardiac tissue may be selected to minimize signal intensity differences between ventricular cavity blood and well-perfused viable myocardium; maximize signal intensity differences between non-viable myocardium and ventricular cavity blood in myocardial infarction; and maximize signal intensity differences between non-viable myocardium and well-perfused viable myocardium in myocardial infarction.